

# ***The Cost Engineer: A Vital Part of the Project Delivery***

*3 June 2003*

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***Office of the Chief Engineer***  
*Naval Facilities Engineering Command*



# *Outline*

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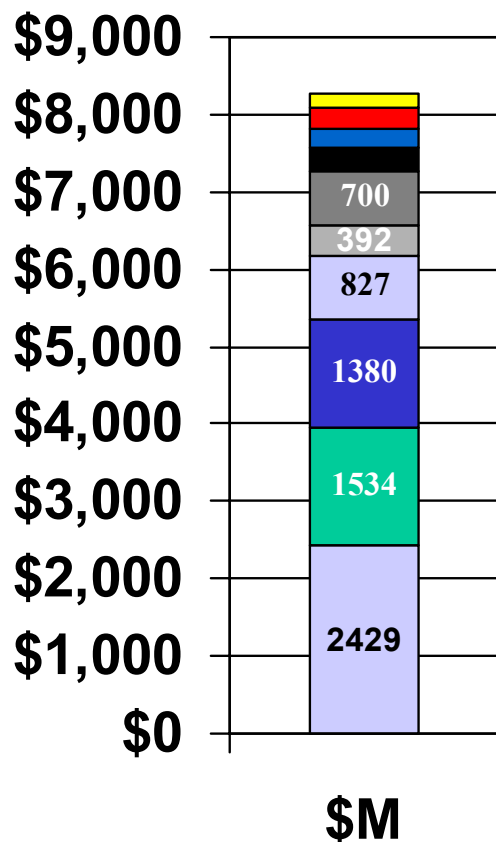
- **NAVFAC Overview – Changing organization**
  - Community Management – Changing people
  - New Mousetraps – Changing technologies
  - Acquisition Strategies – Changing processes
  - Responding to Change – Innovation and the Cost Engineer
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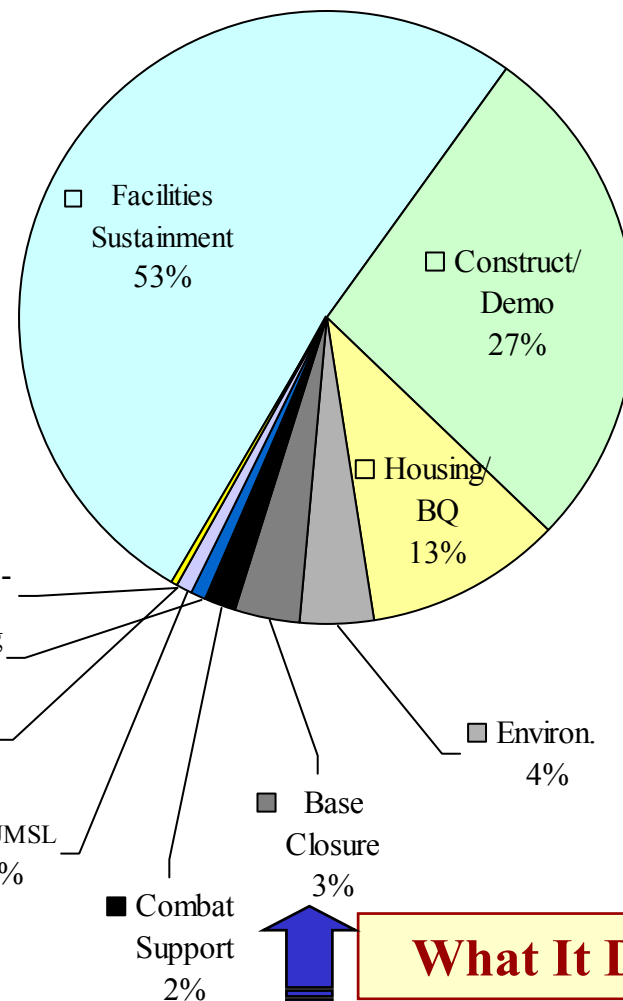
## Where It's From

# NAVFACENGCOM

## FY03 Total Resource Flow



**\$8.3B**



## What It Does

## Where It Goes

Personnel	Payments to Other DON	Payments to Other Gov't	Travel & Transportation	Contract Services	Consumable Purchases	Durable Goods / Equipment	Lands & Structures
\$944	\$46	\$86	\$45	\$2,763	\$556	\$266	\$3,529



# A Global Interdependent Team

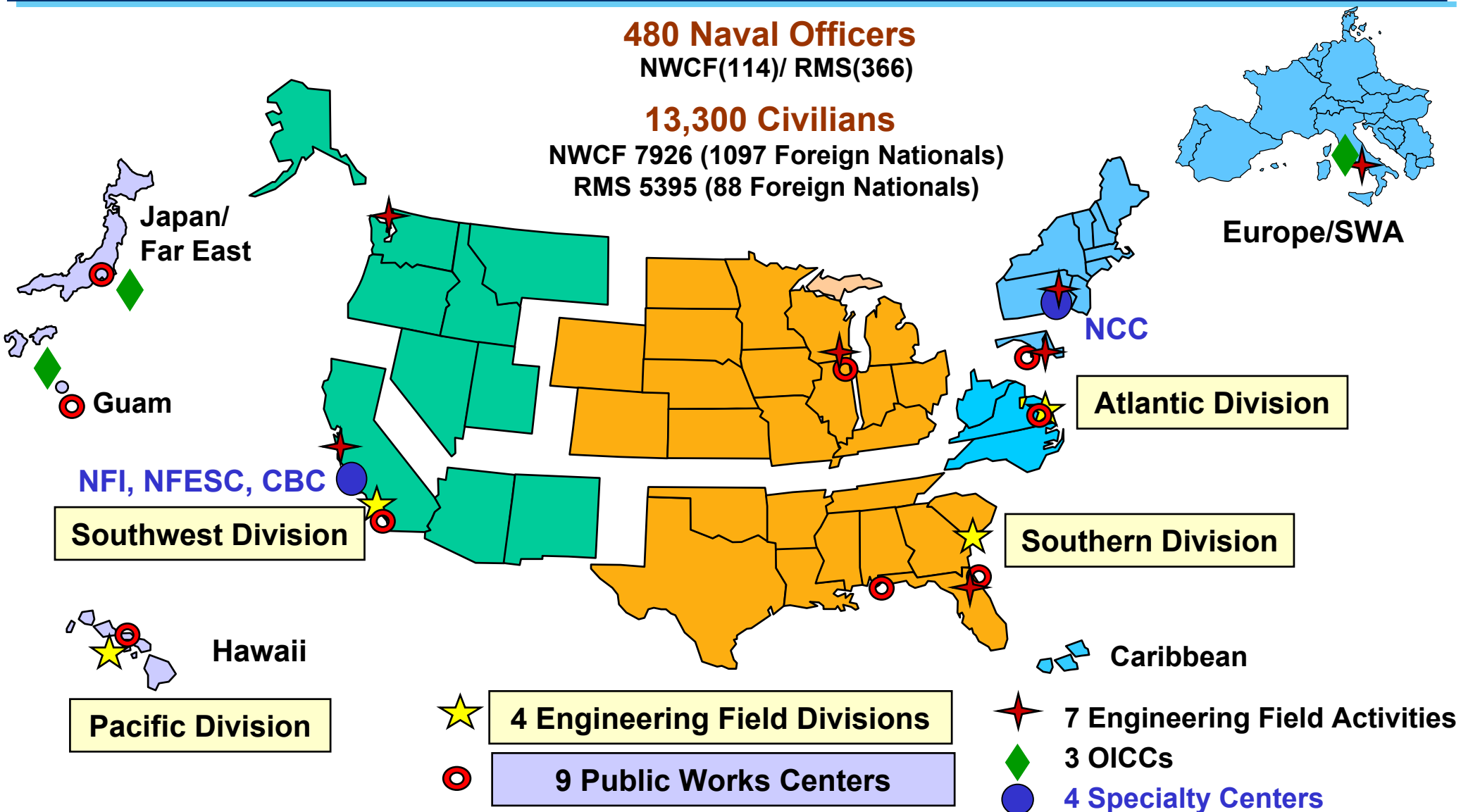
**480 Naval Officers**

NWCF(114)/ RMS(366)

**13,300 Civilians**

NWCF 7926 (1097 Foreign Nationals)

RMS 5395 (88 Foreign Nationals)





# NAVFAC Products & Services By Business Line

- **Capital Improvements**
  - Construction
  - Design A&E
  - Design In-House
  - Specialized Technical Services
  - Ocean Engineering
- **Environmental**
  - Environmental Planning/NEPA
  - Environmental Compliance & Conservation
  - Environmental Restoration
- **Base Development**
  - Facility Planning
  - Project Development
- **Base Operating Support**
  - CESE Mgt/WHE
  - Services
  - Utilities/Energy
  - Facility Mgt and Engineering Services
  - FSC Technical/Program Mgt
  - Base Caretaker
- **Housing**
  - Housing Program Mgt (FH/BH)
- **Real Estate**
  - Real Estate
- **Contingency Engineering**
  - Contingency Engineering/Mil Ops

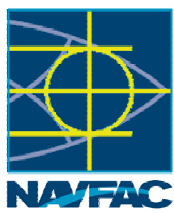
## AT/FP Program

ATFP Products & Services in  
Capital Imps, Base Dev, and  
Contingency Engineering

**315 Deliverables**

## Takeaway

Full range of Facilities  
Engineering Services for  
USN/USMC Support



# ***Changing Threats – Anti-terrorism & Force Protection***

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- **Active participant in ashore Security Engineering Working Group**
  - Special emphasis on waterfront/flightline security
- **New cross-cutting product and service focus in FY 04**
  - Acquire Navy's Physical Security Equipment
  - Field and support Joint procured Chem/Bio gear
  - Develop emergency management/consequence management programs
  - Mitigate vulnerabilities to critical infrastructure



# ***Changing Shore Infrastructure – Commander, Navy Installations***

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- **Our world changes around us...**
- **Creating a single authority for all Navy Shore Installation Management (SIM) issues - CNI**
- **NAVFAC will support and contribute to OPNAV/HQMC/CNI success**
  - **Reduced Overhead**
  - **Leveraging Resources**
- **CNI, NAVFAC and USMC Field Alignment**
  - **Aligned with Regional and Field Structures**
  - **Merge EFD/As with PWCs (reduce flagpoles & overhead)**



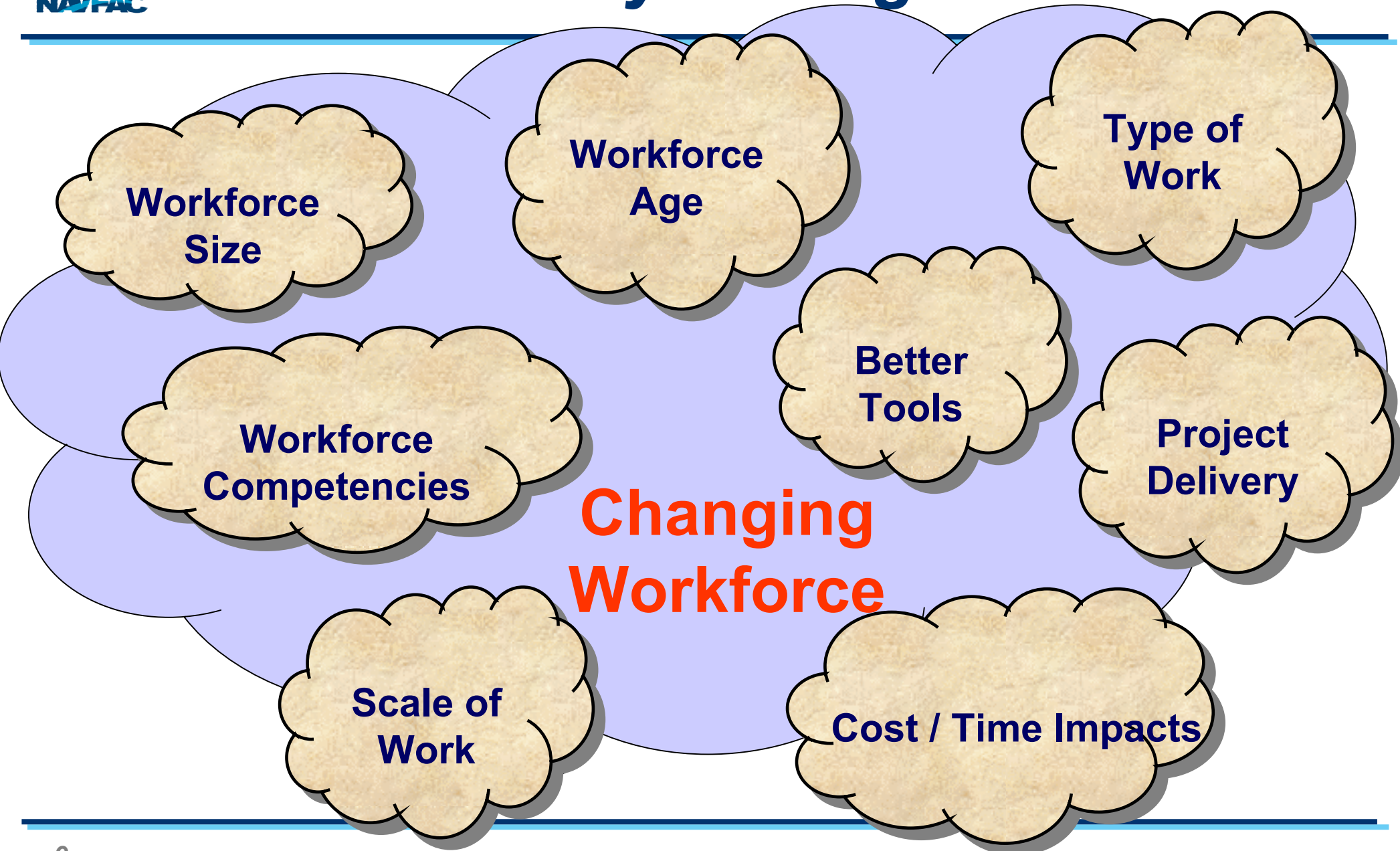
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# Community Management





# ***Changing Attributes***

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- **Technology - new challenges**
- **Workforce Planning**
- **Recruitment Competition**
- **Career Development**
  - Mentoring
  - Training
- **DAWIA, Facilities Engineering Career Field**
- **Demographics and Diversity**



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# ***New Mousetraps***

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- **Fuel Cells**
- **Nanotechnology**
- **Security, Force Protection and Surveillance tools**
- **Mold, Indoor Air Quality**
- **Sustainability**
- **Microturbines**
- **New warfighting weapons and platforms**
- **WI-FI networks**



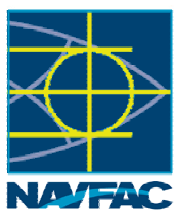
# ***NAVFAC E-Business Initiatives***

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## **NAVFAC is aggressively pursuing e-Business Initiatives**

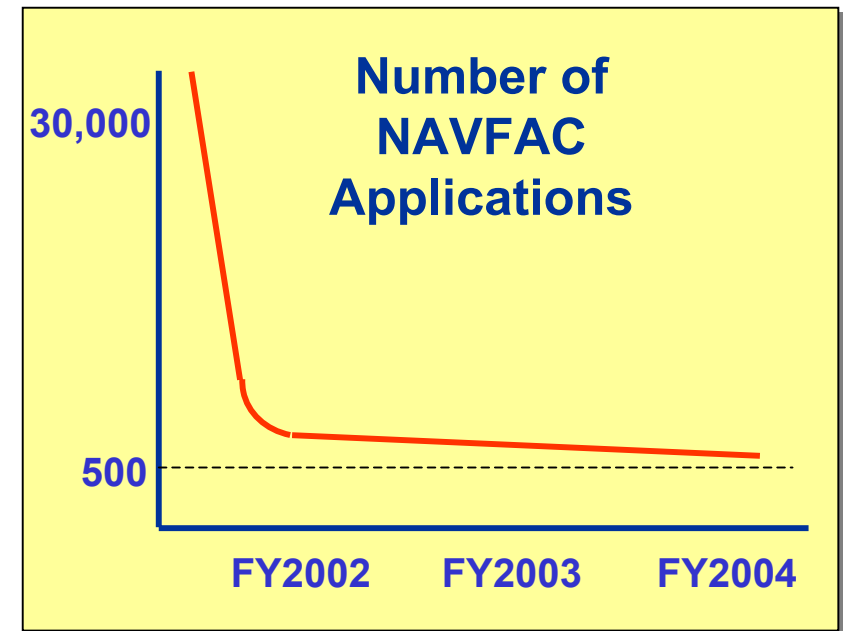


- **ESOL: Electronic Solicitations On Line**
  - On-Line bid specifications and documents
  - Won “Best Electronic Commerce Business Implementation” Award In 2001
- **E-Net: Engineering Network**
  - On-Line Engineering Community of Practice
  - Won DON eGOV Award
- **NGS on-line access**
  - **USACE, NAVFAC, and AFCEA & AFCEE**
- **WebCM: Web Construction Management**
  - COTS, web-based Construction Management for all field offices
  - Standardized platform used by NAVFAC, A/E, Contractor, and Clients
- **E-FSC: Electronic Facilities Service Contracts**
  - DoN e-Business pilot in FY 02 - Roll out in FY 03
  - Using DoD eMALL, allows web-based, client-self ordering of service work using purchase card
  - Task order processing time reduced by 80%



# ***Navy and Marine Corps Intranet (NMCI)***

- **NAVFAC Approach:**
  - Positive, proactive, highly engaged...
  - “Let’s Make it Happen”
- **Infrastructure Transition**
  - Lots of issues, but on track
- **Application Rationalization**
  - Aggressive rationalization
  - Over 30,000 apps reported at 796
  - Further reductions down to 625
  - Short term target ... < 500
- **Very engaged in Navy-Wide Rationalization process**





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# ***Construction Delivery Initiatives***

## **Design-Build-Commission**

### **FY03 Defense Authorization Bill:**

- **Reduce long-term maintenance costs.**
- **Include up to 5 yrs of facility maintenance in construction contract.**
- **Each Service allowed maximum of 12 pilot projects through FY06.**
- **Report to Congress by Jan 2005**

- **Maintain entire building systems**
  - ✓ Operate & maintain building/site systems
  - ✓ Routine & preventative maintenance
  - ✓ Emergency calls
  - ✓ Repairs/replacements
  - ✓ Extended warranty
  - ✓ Continuous commissioning

(Excluded: Utility bills, janitorial services, grounds maintenance, fire & police)
- **Pilot Projects: 3 in FY03; 3 in FY04 (USN & USMC)**
  - Great Lakes BEQ (Nov 02)
  - Small Arms Range, Bangor (Aug 03)
  - BEQ, Quantico (Aug 03)

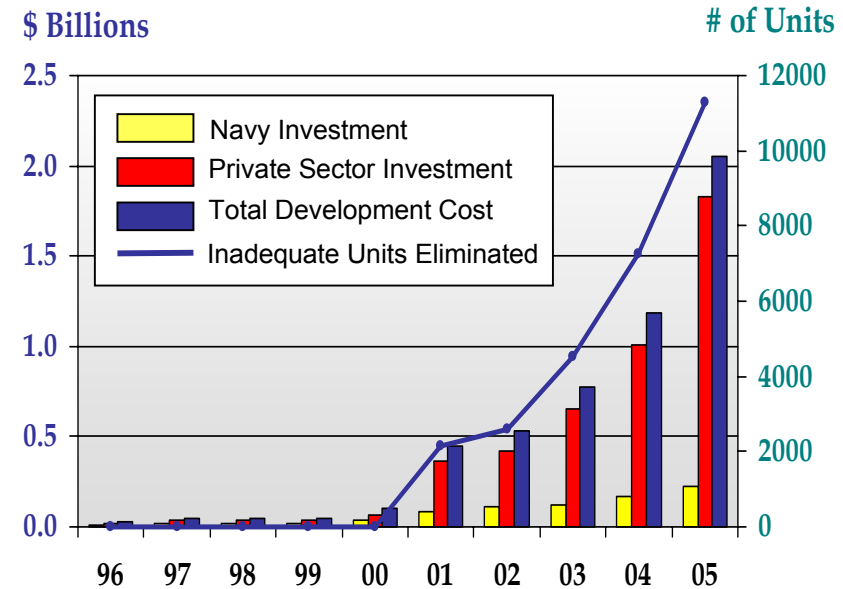




# *Navy Family Housing Public/Private Venture (PPV)*

## *In Progress ...*

- **8,257 units privatized since 1996**
  - Kingsville, TX
  - Everett, WA
  - Camp Pendleton, CA
  - San Diego, CA
  - New Orleans, LA
  - Corpus Christi/Ingleside, TX
  - Beaufort/Parris Island, SC
- **\$746 million Total Development Cost**
- **\$158 million DoN contribution**



***LEVERAGE  
ACHIEVED***

**\$588 million**



# DoN Family Housing PPV

## More Coming ... Eliminate Inadequate Housing by 2007

### FY03

- **Monterey** (US Army lead)
- **Stewart, NY**
- **Camp Pendleton II**
- **Quantico**
- **Beaufort/Parris Isl.**
- **San Diego II\***

### FY04

- **NW Region I**
- **Mid-South TN**
- **Hampton Roads**
- **NE Region (east)**
- **Yuma\***
- **Hawaii Region I**

### FY05

- **SE Region**
- **NE Region (west)**
- **Mid-Atlantic**
- **Camp Lejeune I**
- **Kansas City\***
- **Twentynine Palms\***
- **Hawaii Region II\***
- **San Diego III\***

*Leveraging Achieved  
\$1.8 Billion*

### FY06

- **Hawaii Region III\***
- **NW Region II\***
- **Camp Lejeune II\***
- **Camp Pendleton III\***
- **Kaneohe Bay IV\***

*Utilities, Barracks  
And Administration  
Facilities Next*



*San Diego, Phase II*



# Innovative Acquisition Strategies

## •Naples Improvement Initiative (\$750M)

- Complete support “city”--Gricignano
- Over 2 million SF to seismic standards
- \$500M Lease-Const.(100% private financed)
- Capo Ops/Support MILCON (\$250M)

## •Naples Hospital (\$43.5M)

- Lease-Buy Acquisition (Complete in Apr 03)
- Integrated Construct/Outfit Approach
- Rights of Superficies - \$Ms in Savings

## • NTC Great Lakes (\$70M)

- \$70 M Completed in 30 months
- Sustainable Design Showcase
- Zero Cost Growth

## •RTC Great Lakes (\$750M)

- \$201M Contract w/ Options for 5
- Barracks and Maintenance of HVAC
- Design-Build Commissioning Pilot
- Battle Stations Simulation Technology

NII



Naples  
Hospital



NTC  
Great  
Lakes

RTC  
Great  
Lakes





# *Services Contracting*

**Projected Savings across FYDP - \$248.5M**

**Service Contracts  
totaling \$1.8 Billion  
awarded annually**



## **Current and New Initiatives**

- **Standard formats - globally**
- **CNI-IPT service levels - globally**
- **Consolidated regional scope**
- **Performance – based**
- **Electronic ordering / purchase card**

- **Increased Responsiveness**
- **Increased Buying Power**
- **Consistent business practices/Quality**



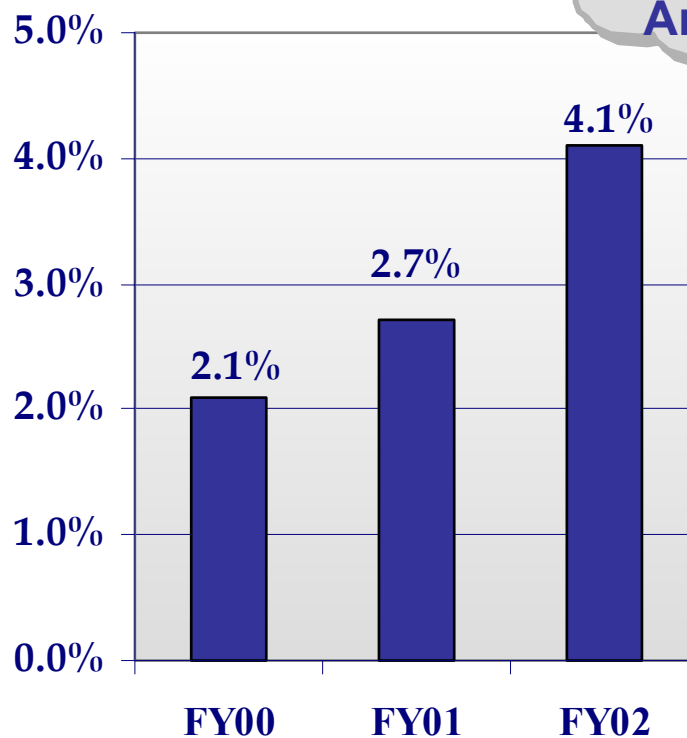
# DON Renewable Energy Savings

## Increase in DON Renewable Energy Use

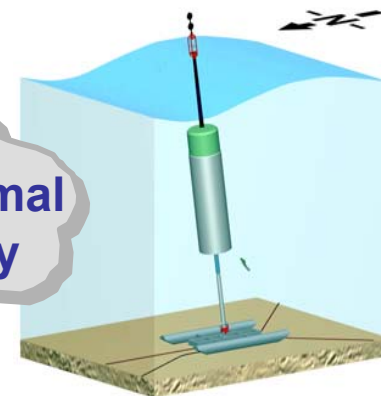


*675kW Wind Turbines  
San Clemente Island*

% of MBTUs



**DOD Executive  
Agent for Geothermal  
And Solar Energy**



*Wave Power Generators  
MCB, Kaneohe Bay, HI*



*750 kW PV Covered Parking Structure  
NAS North Island*



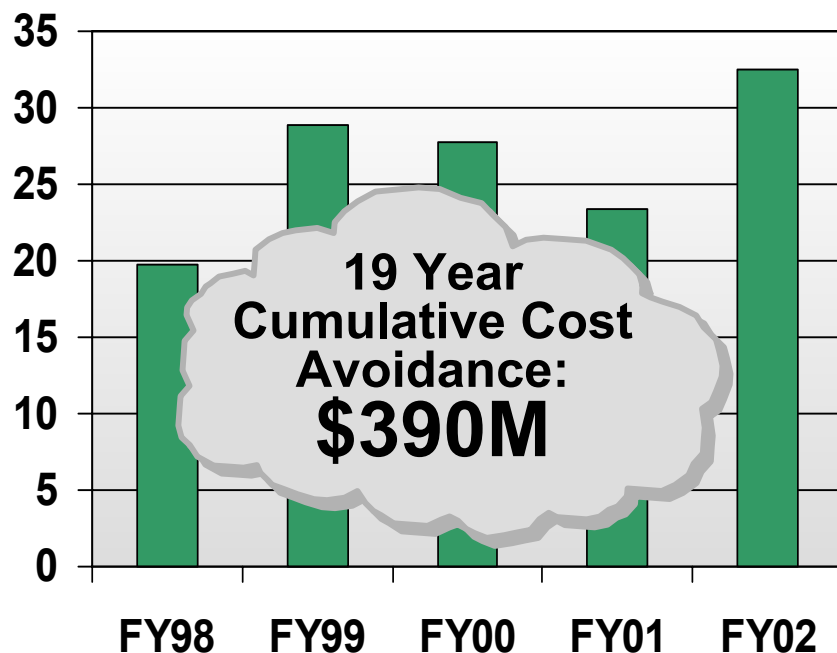
*2-3 MW Solar/hydrogen Energy Park  
NAVSTA Pearl Harbor*



# Energy Savings Initiatives

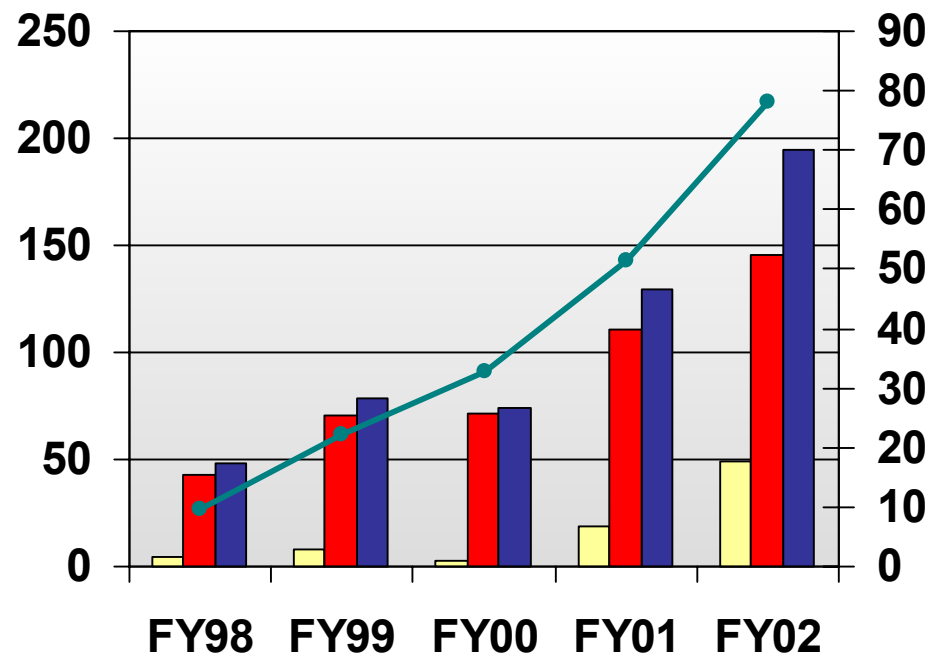
## Rate Intervention and Investment in Energy Projects

Cost Avoidance from  
Rate Intervention  
\$ Millions



■ DoN Cost Avoidance

Energy Project  
Investment  
\$ Millions



■ DoD Investment    ■ Private Investment  
■ Total Investment    ● Total Cost Savings



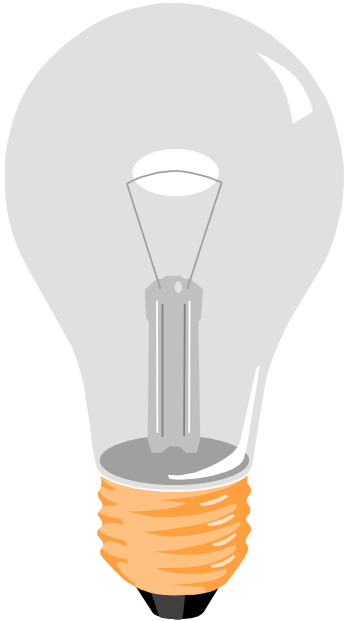
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# *Innovation*

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***The World hates  
Change but it's the  
only thing that  
brings progress....***

***Innovation brings knowledge to  
life – Criteria ensures it's  
effectively repeated***

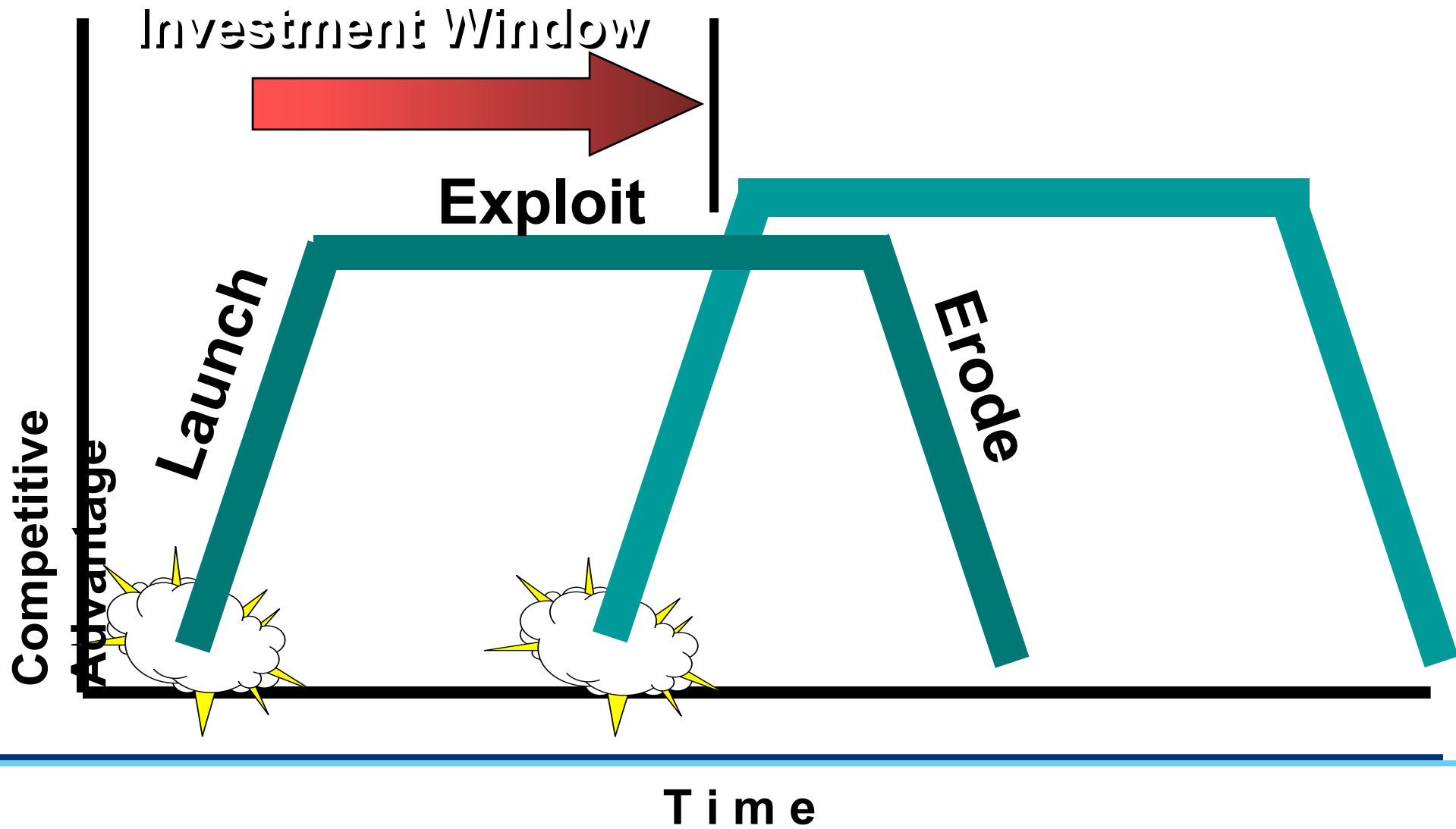


# *Innovation*



***POST-IT Notes Dress***

# *Innovation*





# *Innovation*

## ■ Search

- ◆ Look for opportunities

## ■ Assess

- ◆ Evaluate opportunities based on cost, risk, strategic fit, and difficulty of implementation
- ◆ Cull out critical few for high potential for success

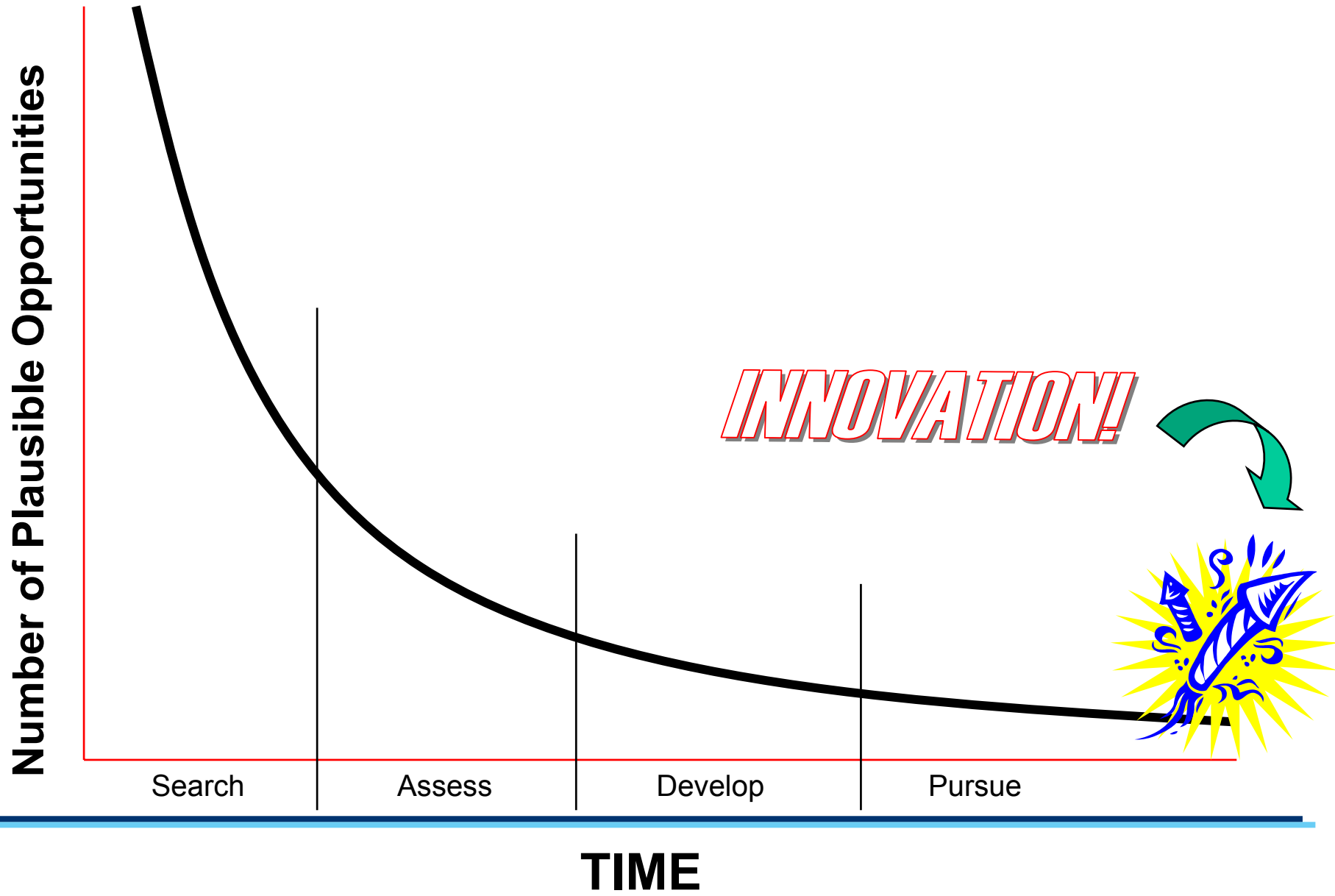
## ■ Develop

- ◆ Examine best case and worst case scenarios
- ◆ Cull out critical few for high potential for success

## ■ Pursue

- ◆ Replace obsolete products and services with innovative ventures

# *Innovation*

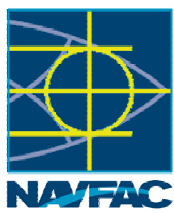




# *Innovation to Criteria*

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- Innovation - Integrate innovation into daily business
  - Transition State of the art, beneficial technology & R&D
  - Lessons learned and feedback (e.g. Value Eng, FACD, VECP, etc)
- Mission
  - Implement changing requirements and operations
  - Improve functionality and flexibility
- Quality and Safety
  - Ensure compliance with higher authority mandates (e.g.FAR, EO)
  - Define level of quality for Navy facilities (Motel 6 vs Ritz-Carlton)
  - Lower life cycle costs
  - Ensure maximum force protection, safety, security, sustainability, durability
- Knowledge Management
  - Provide consistent basis for efficient facilities planning, design and construction, and maintenance



# Criteria

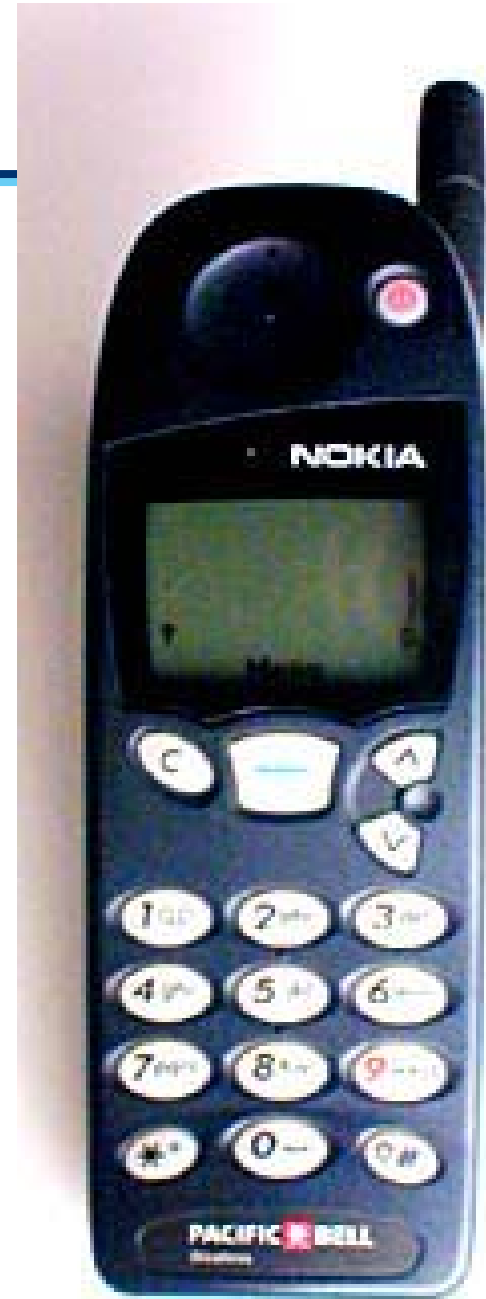
- Types of Criteria
  - Prescriptive Standards (e.g. measurement stds)
  - Process Standards (e.g. ASTM C1028)
  - Performance Standards (ASCE 7)
  - Format or Interoperability Standards (e.g. CADD stds)
- Categories of Criteria
  - De facto Standards (e.g. QWERTY keyboard)
  - Regulatory Standards (e.g. OSHA 1915.1)
  - Owner Standards (e.g. Navy & Boeing)
  - Consensus Standards (e.g. credit cards & phone cards)
- Criteria Infrastructure
  - 400 US Standards Organizations
  - Over 100,000 standards in place

# *Criteria*

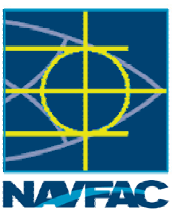


**QWERTY Keyboard**

# *Standards*







# ***Moving Innovation to Criteria***

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- **Death from Carbon Monoxide poisoning – CO detectors**
- **Corroded Reinf Steel - Pre-bent Epoxy coated rebar**
- **Expensive Test cells – Square augmenters**
- **Lead in Indoor Range - Small Arms Ranges contract**
- **Need for durable concrete - Marine Concrete**
- **Carpal tunnel syndrome – ergonomics standards**

# *The Changing Process*

Detailed Plans & Specs → Design Build



Master Builder



Project Manager



Cost Estimator



Cost Manager



# ***Changing Process Roles***

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- **Master Builder**
  - Plan
  - Design
  - Bid
  - Construct
  - Maintain
- **Cost Engineer (Traditional Process (Invitation for Bids))**
  - Take-offs from Complete Plans & Specifications
  - Detailed Government Estimates
  - Bid Analysis
  - Sole Source Negotiations
  - Construction Change Order Estimates
  - Historical Data Collection

# ***Changing Process Roles***

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- **Project Manager**
  - Plan
  - Request for Proposal
  - Design Build
  - Design Build Operate Maintain
  - Total Building Commissioning
- **Cost Manager (Design Build)**
  - Parametric Take-off from a Request for Proposal
  - Parametric Government Estimate
  - Best Value Source Selection
  - Construction Change Order Estimates
  - Historical Data Collection
  - Value Engineers in FACD process
  - Client consulting to ensure maximum benefit for minimum cost



# ***Challenges***

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- **Budgeting Process**
  - Early Scope Development
  - Multi Discipline Team Involvement
  - Determining Acquisition Strategy
  - GAO Audit
    - **REAP WHAT WE SOW!**
- **Maintaining Technical expertise**
  - Detailed Take-offs and Estimates
    - Journeyman Experience based knowledge
  - Parametric Estimating
    - Macro Level in lieu of Detail Estimating
    - Rely on Database versus Experience



# ***Historical Data Collection***

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- **DoD Facility Pricing Guide (UFC 3-701-03) including Unit Cost for DoD Facilities**
- **Invitation for Bid (IFB)**
- **Design Build (DB)**
- **Best Value Source Selection (BVSS)**
- **Job Order Contracting (JOC)**
- **Cost Plus Contracting (e.g. CONCAP)**
- **Multiple Award Construction Contracting (MACC)**



# NAVFAC....

- A global, interdependent, web-based DoN Facilities Engineering Team
- Committed to future savings, cost avoidances, enhanced responsiveness, improved quality - **ASHORE READINESS**



**RIGHT FORCE----RIGHT READINESS----RIGHT COST**

# Questions?